

## SUBCHAPTER C—AIR PROGRAMS (CONTINUED)

### PART 87—CONTROL OF AIR POLLUTION FROM AIRCRAFT AND AIRCRAFT ENGINES

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AUTHORITY: 42 U.S.C. 7401 *et seq.*

SOURCE: 47 FR 58470, Dec. 30, 1982, unless otherwise noted.

#### Subpart A—General Provisions

##### § 87.1 Definitions.

The definitions in this section apply to this part. The definitions apply to all subparts. Any terms not defined in this section have the meaning given in the Clean Air Act. The definitions follow:

*Act* means the Clean Air Act, as amended (42 U.S.C. 7401 *et seq.*).

*Administrator* means the Administrator of the Environmental Protection Agency and any other officer or employee of the Environmental Protection Agency to whom authority involved may be delegated.

*Aircraft* has the meaning given in 14 CFR 1.1, which defines aircraft to mean a device used or intended to be used for flight in the air. Note that under § 87.3, the requirements of this part generally apply only to propulsion engines used on certain airplanes for which U.S. airworthiness certificates are required.

*Aircraft engine* means a propulsion engine which is installed in or which is manufactured for installation in an aircraft.

*Aircraft gas turbine engine* means a turboprop, turbofan, or turbojet aircraft engine.

*Characteristic level* has the meaning given in Appendix 6 of ICAO Annex 16 (as of July 2008). The characteristic level is a calculated emission level for each pollutant based on a statistical assessment of measured emissions from multiple tests.

*Class TP* means all aircraft turboprop engines.

*Class TF* means all turbofan or turbojet aircraft engines or aircraft engines designed for applications that otherwise would have been fulfilled by turbojet and turbofan engines except engines of class T3, T8, and TSS.

*Class T3* means all aircraft gas turbine engines of the JT3D model family.

*Class T8* means all aircraft gas turbine engines of the JT8D model family.

*Class TSS* means all aircraft gas turbine engines employed for propulsion of aircraft designed to operate at supersonic flight speeds.

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*Commercial aircraft engine* means any aircraft engine used or intended for use by an “air carrier,” (including those engaged in “intrastate air transportation”) or a “commercial operator” (including those engaged in “intrastate air transportation”) as these terms are defined in subtitle 7 of title 49 of the United States Code and title 14 of the Code of Federal Regulations.

*Commercial aircraft gas turbine engine* means a turboprop, turbofan, or turbojet commercial aircraft engine.

*Date of introduction or introduction date* means the date of manufacture of the first individual production engine of a given engine model or engine type certificate family to be certificated. This does not include test engines or other engines not placed into service.

*Date of manufacture* means the date on which a manufacturer is issued documentation by FAA (or other competent authority for engines certificated outside the United States) attesting that the given engine conforms to all applicable requirements. This date may not be earlier than the date on which assembly of the engine is complete. Where the manufacturer does not obtain such documentation from FAA (or other competent authority for engines certificated outside the United States), *date of manufacture* means the date of final assembly of the engine.

*Derivative engine for emissions certification purposes* means an engine that has the same or similar emissions characteristics as an engine covered by a U.S. type certificate issued under 14 CFR part 33. These characteristics are specified in § 87.48.

*Designated EPA Program Officer* means the Director of the Assessment and Standards Division, 2000 Traverwood Drive, Ann Arbor, Michigan 48105.

*DOT Secretary* means the Secretary of the Transportation and any other officer or employee of the Department of Transportation to whom the authority involved may be delegated.

*Engine* means an individual engine. A group of identical engines together make up an engine model or sub-model.

*Engine model* means an engine manufacturer’s designation for an engine grouping of engines and/or engine sub-models within a single engine type cer-

tificate family, where such engines have similar design, including being similar with respect to the core engine and combustor designs.

*Engine sub-model* means a designation for a grouping of engines with essentially identical design, especially with respect to the core engine and combustor designs and other emission-related features. Engines from an engine sub-model must be contained within a single engine model. For purposes of this part, an original engine model configuration is considered a sub-model. For example, if a manufacturer initially produces an engine model designated ABC and later introduces a new sub-model ABC-1, the engine model consists of two sub-models: ABC and ABC-1.

*Engine type certificate family* means a group of engines (comprising one or more engine models, including sub-models and derivative engines for emissions certification purposes of those engine models) determined by FAA to have a sufficiently common design to be grouped together under a type certificate.

*EPA* means the U.S. Environmental Protection Agency.

*Except* means to routinely allow engines to be produced and sold that do not meet (or do not fully meet) otherwise applicable standards. (Note that this definition applies only with respect to spare engines and that the term “except” has its plain meaning in other contexts.) Excepted engines must conform to regulatory conditions specified for an exception in this part and other applicable regulations. Excepted engines are deemed to be “subject to” the standards of this part even though they are not required to comply with the otherwise applicable requirements. Engines excepted with respect to certain standards must comply with other standards from which they are not excepted.

*Exempt* means to allow (through a formal case-by-case process) engines to be produced and sold that do not meet (or do not fully meet) otherwise applicable standards. Exempted engines must conform to regulatory conditions specified for an exemption in this part

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and other applicable regulations. Exempted engines are deemed to be “subject to” the standards of this part even though they are not required to comply with the otherwise applicable requirements. Engines exempted with respect to certain standards must comply with other standards as a condition of the exemption.

*Exhaust emissions* means substances emitted to the atmosphere from exhaust discharge nozzles, as measured by the test procedures specified in subpart G of this part.

*FAA* means the U.S. Department of Transportation, Federal Aviation Administration.

*Fuel venting emissions* means raw fuel, exclusive of hydrocarbons in the exhaust emissions, discharged from aircraft gas turbine engines during all normal ground and flight operations.

*Good engineering judgment* involves making decisions consistent with generally accepted scientific and engineering principles and all relevant information, subject to the provisions of 40 CFR 1068.5.

*ICAO Annex 16* means Volume II of Annex 16 to the Convention on International Civil Aviation (incorporated by reference in § 87.8).

*In-use aircraft gas turbine engine* means an aircraft gas turbine engine which is in service.

*Military aircraft* means aircraft owned by, operated by, or produced for sale to the armed forces or other agency of the federal government responsible for national security (including but not limited to the Department of Defense) and other aircraft considered to be military aircraft under international law and conventions.

*New* means relating to an aircraft or aircraft engine that has never been placed into service.

*Operator* means any person or company that owns or operates an aircraft.

*Production cutoff date* or *date of the production cutoff* means the date on which interim phase-out allowances end.

*Rated output (rO)* means the maximum power/thrust available for take-off at standard day conditions as approved for the engine by FAA, including reheat contribution where applicable, but excluding any contribution due

to water injection, expressed in kilowatts or kilonewtons (as applicable) and rounded to at least three significant figures.

*Rated pressure ratio (rPR)* means the ratio between the combustor inlet pressure and the engine inlet pressure achieved by an engine operating at rated output, rounded to at least three significant figures.

*Round* has the meaning given in 40 CFR 1065.1001.

*Smoke* means the matter in exhaust emissions that obscures the transmission of light, as measured by the test procedures specified in subpart G of this part.

*Smoke number* means a dimensionless value quantifying smoke emissions calculated in accordance with ICAO Annex 16.

*Spare engine* means an engine installed (or intended to be installed) on an in-service aircraft to replace an existing engine and that is excepted as described in § 87.50(c).

*Standard day conditions* means the following ambient conditions: temperature = 15 °C, specific humidity = 0.00634 kg H<sub>2</sub>O/kg dry air, and pressure = 101.325 kPa.

*Subsonic* means relating to aircraft that are not supersonic aircraft.

*Supersonic* means relating to aircraft that are certificated to fly faster than the speed of sound.

*Tier 0* means relating to an engine that is subject to the Tier 0 NO<sub>x</sub> standards specified in § 87.21.

*Tier 2* means relating to an engine that is subject to the Tier 2 NO<sub>x</sub> standards specified in § 87.21.

*Tier 4* means relating to an engine that is subject to the Tier 4 NO<sub>x</sub> standards specified in § 87.21.

*Tier 6* means relating to an engine that is subject to the Tier 6 NO<sub>x</sub> standards specified in § 87.23.

*Tier 8* means relating to an engine that is subject to the Tier 8 NO<sub>x</sub> standards specified in § 87.23.

*Turbofan engine* means a gas turbine engine designed to create its propulsion from exhaust gases and from air that bypasses the combustion process and is accelerated in a ducted space between the inner (core) engine case and the outer engine fan casing.

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*Turbojet engine* means a gas turbine engine that is designed to create all of its propulsion from exhaust gases.

*Turboprop engine* means a gas turbine engine that is designed to create most of its propulsion from a propeller driven by a turbine, usually through a gearbox.

*Turboshaft engine* means a gas turbine engine that is designed to drive a rotor transmission system or a gas turbine engine not used for propulsion.

*U.S.-registered aircraft* means an aircraft that is on the U.S. Registry.

*We (us, our)* means the Administrator of the Environmental Protection Agency and any authorized representatives.

[77 FR 36379, June 18, 2012]

### § 87.2 Abbreviations.

The abbreviations used in this part have the following meanings:

% percent  
° degree  
CO carbon monoxide  
CO<sub>2</sub> carbon dioxide  
g gram  
HC hydrocarbon(s)  
kN kilonewton  
kW kilowatt  
LTO landing and takeoff  
NO<sub>x</sub> oxides of nitrogen  
rO rated output  
rPR rated pressure ratio  
SN smoke number

[77 FR 36381, June 18, 2012]

### § 87.3 General applicability and requirements.

(a) The regulations of this part apply to engines on all aircraft that are required to be certificated by FAA under 14 CFR part 33 except as specified in this paragraph (a). These regulations do not apply to the following aircraft engines:

(1) Reciprocating engines (including engines used in ultralight aircraft).

(2) Turboshaft engines such as those used in helicopters.

(3) Engines used only in aircraft that are not airplanes. For purposes of this paragraph (a)(3), “airplane” means a fixed-wing aircraft that is heavier than air.

(4) Engines not used for propulsion.

(b) Under section 232 of the Act, the Secretary of Transportation issues reg-

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ulations to ensure compliance with the standards and related requirements of this part (42 U.S.C. 7572).

(c) The Secretary of Transportation shall apply these regulations to aircraft of foreign registry in a manner consistent with obligations assumed by the United States in any treaty, convention or agreement between the United States and any foreign country or foreign countries.

(d) No State or political subdivision of a State may adopt or attempt to enforce any aircraft or aircraft engine standard respecting emissions unless the standard is identical to a standard applicable to such aircraft under this part (including prior-tier standards applicable to exempt engines).

[77 FR 36381, June 18, 2012]

### § 87.4 [Reserved]

### § 87.6 Aircraft safety.

The provisions of this part will be revised if at any time the DOT Secretary determines that an emission standard cannot be met within the specified time without creating a hazard to aircraft safety.

[77 FR 36381, June 18, 2012]

### § 87.8 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Environmental Protection Agency must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave. NW., Room B102, EPA West Building, Washington, DC 20460, (202) 202-1744, and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).